

WHAT IS CLAIMED IS:

*Sub.* A method for enabling communication between a plurality of telephony devices, comprising:

receiving incoming media packets from each telephony device;

dividing an incoming payload section of each incoming media packet into one or more data segments;

mixing the data segments to create an aggregate data segment; and

constructing an outgoing payload section for one or more of the telephony devices by linking successively generated aggregate data segments.

2. The method of Claim 1, wherein receiving incoming media packets from each telephony device comprises receiving incoming media packets comprising audio data.

3. The method of Claim 1, further comprising constructing an outgoing payload section for a telephony device from which incoming media packets were not received by linking a selected number of successively generated aggregate data segments appropriate for the telephony device.

4. The method of Claim 1, further comprising inserting one or more silence placeholders to fill a time interval during which no incoming media packets are received from a particular telephony device.

5. The method of Claim 4, further comprising dividing a silence placeholder into one or more silence segments.

5 6. The method of Claim 5, further comprising aligning a silence segment from a telephony device with a data segment or a silence segment of one or more of the other telephony devices.

10 7. The method of Claim 6, wherein mixing the data segments to create an aggregate data segment further comprises:

15 ignoring silence segments and mixing the aligned data segments from the telephony devices to form an aggregate data segment; and

if only silence segments are aligned, replacing the aligned silence segments with an aggregate silence segment.

20 8. The method of Claim 7, wherein constructing an outgoing payload section for one or more of the telephony devices comprises linking a selected number of successively generated aggregate data segments and aggregate silence segments.

25 9. The method of Claim 8, further comprising discarding all outgoing payload sections constructed using only aggregate silence segments.

5 10. The method of Claim 1, wherein dividing an incoming payload section of each incoming packet into one or more data segments comprises dividing a first payload section of a first incoming packet into one or more full segments of equal size and a remainder segment containing the remainder of the payload section.

10 11. The method of Claim 10, further comprising dividing a second payload section of a second incoming packet received after the first incoming packet into a completion segment, one or more full segments of equal size, and a remainder segment.

15 12. The method of Claim 11, further comprising linking the remainder segment of the first payload section to the completion segment of the second payload section to form a full segment.

20 13. The method of Claim 1, wherein constructing an outgoing payload section for one or more of the telephony devices by linking a selected number of successively generated aggregate data segments comprises constructing a first outgoing payload section for a telephony device by linking one or more full aggregate data segments and a  
25 portion of another aggregate data segment, leaving a remainder aggregate segment.

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15. A method for enabling payload size conversion, comprising:

receiving incoming media packets from one or more devices;

5       dividing an incoming payload section of each incoming packet into one or more segments; and

constructing an outgoing payload section for one or more devices by linking a selected number of successive segments.

10       16. The method of Claim 15, wherein receiving incoming media packets from one or more device comprises receiving incoming media packets comprising audio data.

15       17. The method of Claim 15, wherein dividing an incoming payload section of each incoming packet into one or more segments comprises dividing a first payload section of a first incoming packet into one or more full segments of equal size and a remainder segment containing the  
20       remainder of the payload section.

25       18. The method of Claim 17, further comprising dividing a second payload section of a second incoming packet received after the first incoming packet into a completion segment, one or more full segments of equal size, and a remainder segment.

30       19. The method of Claim 18, further comprising linking the remainder segment of the first payload section to the completion segment of the second payload section to form a full segment.

20. The method of Claim 15, wherein constructing an outgoing payload section for each device by linking a selected number of successive segments comprises constructing a first outgoing payload section for a device by linking one or more full segments and a portion of another segment, leaving a remainder segment.

21. The method of Claim 20, further comprising constructing a second outgoing payload section by linking the remainder segment to one or more successive full segments and a portion of another segment.

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11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

22. An apparatus enabling communication between a plurality of telephony devices, comprising:

a queue operable to receive incoming media packets from a plurality of telephony devices;

5 a payload segmenter coupled to the queue and operable to divide an incoming payload section of each incoming packet into one or more data segments;

10 a mixer coupled to the payload segmenter and operable to mix the data segments from the telephony devices to create an aggregate data segment; and

a reassembly buffer coupled to the mixer and operable to construct an outgoing payload section for one or more telephony devices by linking successively generated aggregate data segments.

15 23. The apparatus of Claim 22, further comprising an input transcoder operable to convert data in the incoming payload sections into a common media format.

20 24. The apparatus of Claim 23, wherein the input transcoder is operable to convert audio data in the incoming payload section to G.711 encoded audio data.

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11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

25. The apparatus of Claim 22, wherein:

the queue is further operable to insert one or more  
silence placeholders to fill a time interval during which  
no incoming media packets are received from a particular  
telephony device;

the payload segmenter is further operable to divide a  
silence placeholder into one or more silence segments; and

the mixer is further operable to ignore silence  
segments and mix the data segments from the telephony  
devices to form an aggregate data segment, and if only  
silence segments exist, operable to replace the silence  
segments with an aggregate silence segment.

26. The apparatus of Claim 22, wherein the payload  
segmenter is further operable to:

divide a first payload section of a first incoming  
packet into one or more full segments of equal size and a  
remainder segment containing the remainder of the payload  
section; and

divide a second payload section of a second incoming  
packet received after the first incoming packet into a  
completion segment, one or more full segments of equal  
size, and a remainder segment.

27. The apparatus of Claim 26, further comprising an  
input buffer coupled to the payload segmenter and operable  
to link the remainder segment of the first payload section  
to the completion segment of the second payload section to  
form a full segment.



28. A communication network, comprising:

a plurality of telephony devices operable to transmit media packets, the media packets each having a payload section including telecommunication data, the payload sections transmitted from at least one of the telephony devices having a different size than the payload sections transmitted from the other telephony devices; and

a bridge, including:

a queue operable to receive incoming media packets from the plurality of telephony devices;

a payload segmenter coupled to the queue and operable to divide an incoming payload section of each incoming packet into one or more data segments;

a mixer coupled to the payload segmenter and operable to mix the data segments from the telephony devices to create an aggregate data segment; and

a reassembly buffer coupled to the mixer and operable to construct an outgoing payload section for one or more telephony devices by linking successively generated aggregate data segments.

29. The communication network of Claim 28, wherein the bridge further comprises an input transcoder operable to convert the telecommunication data in the received payload sections into a common media format.

30. The communication network of Claim 29, wherein the input transcoder is operable to convert audio data in the incoming payload sections to G.711 encoded audio data.

31. The communication network of Claim 28, wherein:  
the queue is further operable to insert one or more  
silence placeholders to fill a time interval during which  
no incoming media packets are received from a particular  
telephony device;

the payload segmenter is further operable to divide a  
silence placeholder into one or more silence segments; and

the mixer is further operable to ignore silence  
segments and mix the data segments from the telephony  
devices to form an aggregate data segment, and if only  
silence segments exist, operable to replace the silence  
segments with an aggregate silence segment.

32. The communication network of Claim 28, wherein  
the payload segmenter is further operable to:

divide a first payload section of a first incoming  
packet into one or more full segments of equal size and a  
remainder segment containing the remainder of the payload  
section; and

divide a second payload section of a second incoming  
packet received after the first incoming packet into a  
completion segment, one or more full segments of equal  
size, and a remainder segment.

33. The communication network of Claim 32, wherein  
the bridge further comprises an input buffer coupled to the  
payload segmenter and operable to link the remainder  
segment of the first payload section to the completion  
segment of the second payload section to form a full  
segment.

34. A program embodied in a computer readable medium and operable to perform the following steps:

receiving incoming media packets from a plurality of telephony devices;

5 dividing an incoming payload section of each incoming media packet into one or more data segments;

mixing the data segments to create an aggregate data segment; and

constructing an outgoing payload section for one or more of the telephony devices by linking successively generated aggregate data segments.

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35. The program of Claim 34, wherein receiving incoming media packets from each telephony device comprises receiving incoming media packets comprising audio data.

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36. The program of Claim 34, further operable to construct an outgoing payload section for a telephony device from which incoming media packets were not received by linking a selected number of successively generated aggregate data segments appropriate for the telephony device.

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37. The program of Claim 34, further operable to insert one or more silence placeholders to fill a time interval during which no incoming media packets are received from a particular telephony device.

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38. The program of Claim 37, further operable to divide a silence placeholder into one or more silence segments.

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39. The program of Claim 38, further operable to align a silence segment from a telephony device with a data segment or a silence segment of one or more of the other telephony devices.

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40. The program of Claim 39, wherein mixing the aligned data segments to create an aggregate data segment further comprises:

ignoring silence segments and mixing the aligned data segments from the telephony devices to form an aggregate data segment; and

if only silence segments are aligned, replacing the aligned silence segments with an aggregate silence segment.

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41. The program of Claim 40, wherein constructing an outgoing payload section for one or more of the telephony devices comprises linking a selected number of successively generated aggregate data segments and aggregate silence segments.

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42. The program of Claim 41, further operable to discard all outgoing payload sections constructed using only aggregate silence segments.

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43. The program of Claim 34, wherein dividing an incoming payload section of each incoming packet into one or more data segments comprises dividing a first payload section of a first incoming packet into one or more full segments of equal size and a remainder segment containing the remainder of the payload section.

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44. The program of Claim 43, further operable to divide a second payload section of a second incoming packet received after the first incoming packet into a completion segment, one or more full segments of equal size, and a remainder segment.

45. The program of Claim 44, further operable to link the remainder segment of the first payload section to the completion segment of the second payload section to form a full segment.

46. The program of Claim 34, wherein constructing an outgoing payload section for one or more of the telephony devices by linking a selected number of successively generated aggregate data segments comprises constructing a first outgoing payload section for a telephony device by linking one or more full aggregate data segments and a portion of another aggregate data segment, leaving a remainder aggregate segment.

47. The program of Claim 46, further operable to construct a second outgoing payload section by linking the remainder aggregate data segment to one or more successive full aggregate data segments, and a portion of another aggregate data segment.

48. A program embodied in a computer readable medium and operable to perform the following steps:

receiving incoming media packets from one or more devices;

5 dividing an incoming payload section of each incoming packet into one or more segments; and

constructing an outgoing payload section for one or more devices by linking a selected number of successive segments.

10 49. The program of Claim 48, wherein receiving incoming media packets from one or more device comprises receiving incoming media packets comprising audio data.

15 50. The program of Claim 48, wherein dividing an incoming payload section of each incoming packet into one or more segments comprises dividing a first payload section of a first incoming packet into one or more full segments of equal size and a remainder segment containing the  
20 remainder of the payload section.

25 51. The program of Claim 50, further operable to divide a second payload section of a second incoming packet received after the first incoming packet into a completion segment, one or more full segments of equal size, and a remainder segment.

30 52. The program of Claim 51, further operable to link the remainder segment of the first payload section to the completion segment of the second payload section to form a full segment.

53. The program of Claim 48, wherein constructing an outgoing payload section for each device by linking a selected number of successive segments comprises constructing a first outgoing payload section for a device by linking one or more full segments and a portion of another segment, leaving a remainder segment.

54. The program of Claim 53, further operable to construct a second outgoing payload section by linking the remainder segment to one or more successive full segments and a portion of another segment.

55. An apparatus enabling communication between a plurality of telephony devices, comprising:

a queue operable to receive incoming media packets from a plurality of telephony devices;

5 a payload segmenter coupled to the queue and operable to divide an incoming payload section of each incoming packet into one or more data segments; and

10 a reassembly buffer coupled to the payload segmenter and operable to construct an outgoing payload section for one or more telephony devices by linking successive data segments.

15 56. The apparatus of Claim 55, further comprising an input transcoder operable to convert data in the incoming payload sections into a common media format.

20 57. The apparatus of Claim 56, wherein the input transcoder is operable to convert audio data in the incoming payload section to G.711 encoded audio data.

58. The apparatus of Claim 55, wherein the payload segmenter is further operable to:

25 divide a first payload section of a first incoming packet into one or more full segments of equal size and a remainder segment containing the remainder of the payload section; and

30 divide a second payload section of a second incoming packet received after the first incoming packet into a completion segment, one or more full segments of equal size, and a remainder segment.



59. The apparatus of Claim 58, further comprising an input buffer coupled to the payload segmenter and operable to link the remainder segment of the first payload section to the completion segment of the second payload section to form a full segment.